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ASSIGNMENT BOOKLET

Mathematics 8

Unit 1 Assignment

FOR STUDENT USE ONLY

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Teacher

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Mathematics 8

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Unit 1

Square Roots and the Pythagorean Theorem **Assignment Booklet**

we encourage

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Summary

	Total Possible Marks	Your Mark
Lesson 1	17	
Lesson 2	22	
Lesson 3	14	
Lesson 4	18	
Lesson 5	19	
Lesson 6	18	
Lesson 7	21	
	129	

Teacher's Comments

Mathematics 8

Unit 1: Square Roots and the Pythagorean Theorem

Assignment Booklet

ISBN 978-0-7741-3139-1

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Students	✓
Teachers	✓
Administrators	
Home Instructors	
General Public	
Other	

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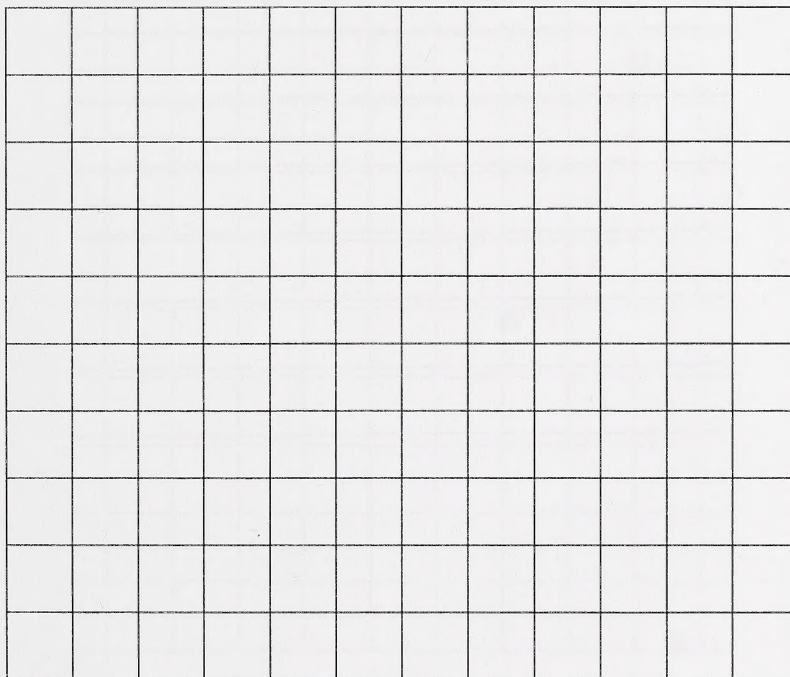
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UNIT 1 ASSIGNMENT BOOKLET

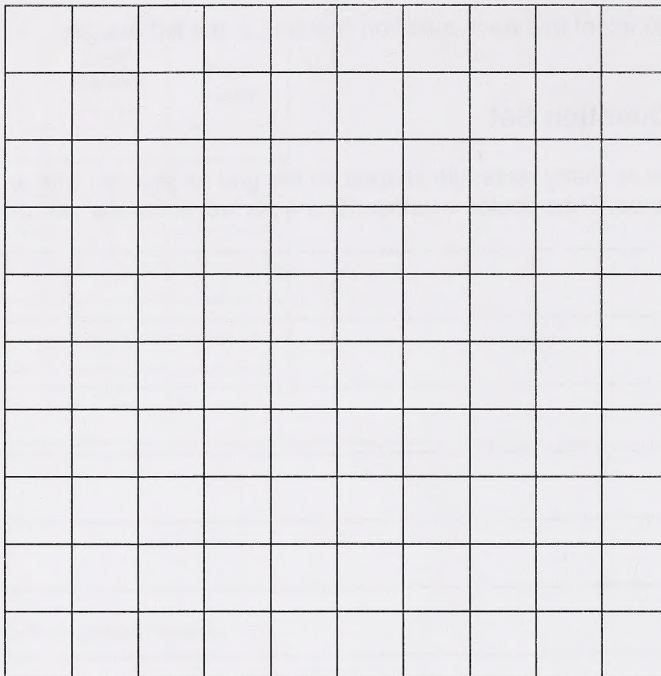
The value of each assignment and each question is stated in the left margin.

Unit 1: Lesson 1 Question Set

- (4 marks)** 1. Draw as many rectangle shapes on the grid as you can with an area of 12 unit squares. Then decide whether 12 is a perfect square or not. Justify your answer.

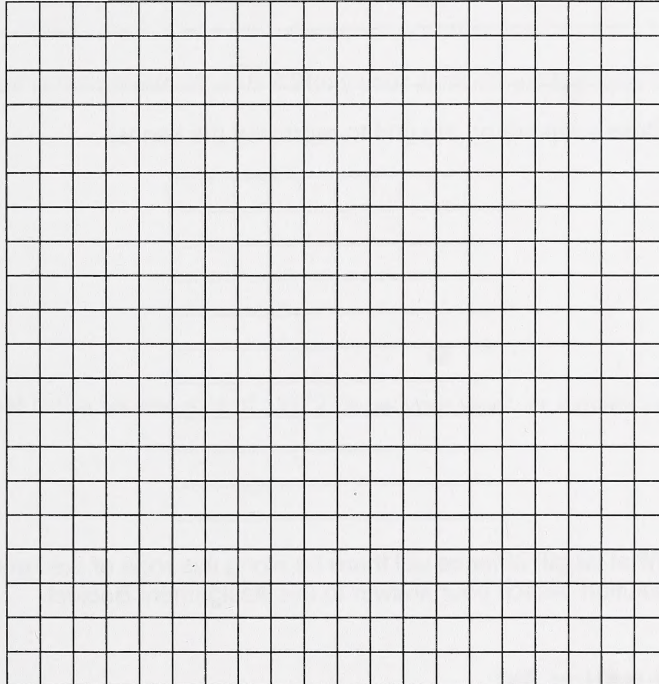


- (3 marks)** 2. Is the number 49 a perfect square? Justify your answer with a drawing on the grid.



- (3 marks)** 3. In the Get Focused there was a photograph showing a building with large, square glass windows. The square wall of another glass-faced building is to be made up of 169 square glass frames placed close together. Determine the number of frames that would be placed along each edge of the wall. Use a diagram on the grid to show your solution.

If you wish to complete this question electronically, there is a “0.5-cm grid” on the Math 8 Multimedia DVD that you can use.

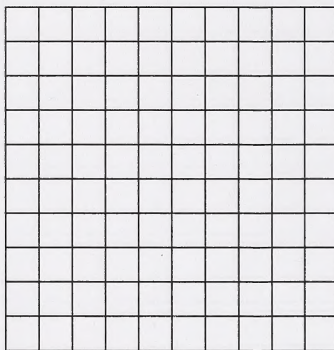


- (2 marks)** 4. Find a square number between 190 and 220. Show, in symbols or with a diagram, that the number you found is a square number. Attach your answer to this Assignment Booklet.

If you wish to complete this question electronically, there is a “0.5-cm grid” on the Math 8 Multimedia DVD that you can use.

- (2 marks)** 5. a. What is the largest possible area the kennel can have if its side cannot exceed 5 m? Explain your answer.

- (1 mark)** b. Draw a square on the grid to represent the kennel.



- (2 marks)** c. What length of fence will there be along the edge of the kennel? Show your solution. Attach your answer to this Assignment Booklet.

Unit 1: Lesson 2 Question Set

- (2 marks)** 1. Write a division statement that shows 144 is a square number.

(2 marks) 2. Write a multiplication statement that shows 576 is a square number.

(2 marks) 3. What is the square of $\sqrt{16}$? Show your work, or explain your answer.

(2 marks) 4. What is the square root of 121^2 ? Show your work, or explain your answer.

(1 mark) 5. Which of the following is ordered from least to greatest? Circle the correct answer.

A. $\sqrt{64}, \sqrt{25}, \sqrt{36}, \sqrt{25}$

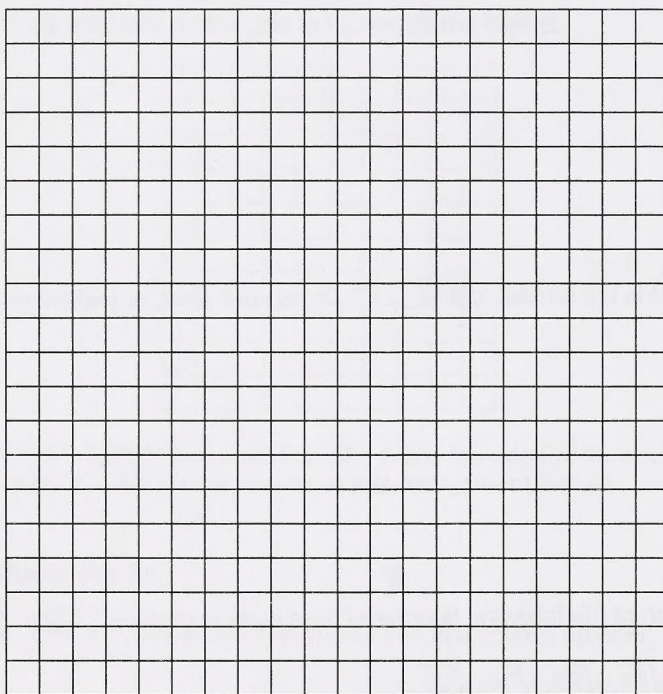
B. $\sqrt{25}, \sqrt{25}, \sqrt{36}, \sqrt{64}$

C. $\sqrt{25}, \sqrt{36}, \sqrt{64}, \sqrt{25}$

D. $5, \sqrt{64}, \sqrt{36}, \sqrt{25}$

- (3 marks)** 6. Find the square root of 196 by listing its factors in ascending order.

- (3 marks)** 7. Find the square root of 361 by drawing a rectangle (or square) on the grid.



- (3 marks)** 8. Determine whether 48 is a perfect square by listing pairs of related factors.

9. A skateboard park has a large square patio area for spectators. This patio has 9801 square tiles.

(2 marks)

- a. Does 9801 have an even or odd number of factors? How can you tell?

(1 mark)

- b. Is 9801 a square number? How can you tell?

(1 mark)

- c. How many tiles are along one side of the patio?

Unit 1: Lesson 3 Question Set

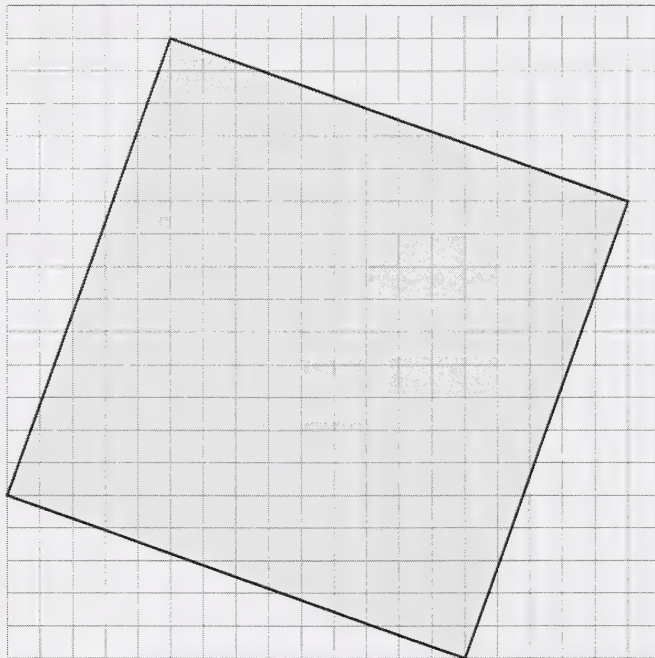
(2 marks)

1. The area of a square is 121 cm^2 . What is its side length? Show your solution.

(2 marks)

2. If several of the solar panels on a neighbour's new home, similar to the illustration at the beginning of this lesson, had a square area of 224 cm^2 , what is the side length of the solar panels? Show your solution.

- (2 marks)** 3. The side length of a square is $\sqrt{115}$ m. What is the area of this square? Show your work.
4. Quinlin looked at the following square on a grid. (You may find “Square on a Grid” on your Math 8 Multimedia DVD.)



- (6 marks)** a. Determine the area of the square by calculation. Show your solution.

- (2 marks) b. Find the side length of the copied square from its area. Show your calculations.

Unit 1: Lesson 4 Question Set

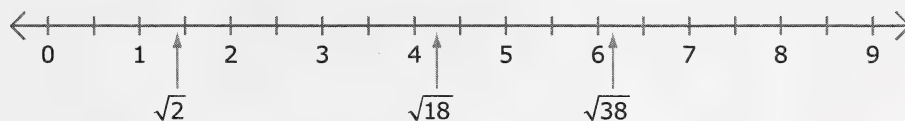
1. Between which two whole numbers are the following?

(2 marks) a. $\sqrt{38}$

(2 marks) b. $\sqrt{35}$

(2 marks) c. $\sqrt{21}$

- (5 marks) 2. A student placed the some square roots on a number line.



Which of these square roots are properly placed on the number line, and which are not? Show your work.

3. A square flower bed in a public park, similar to the illustration at the start of this lesson, is to have an area of 90 m^2 . The grounds keeper wants to calculate the side length for the square flower bed in order to plan for flowers along the edges of the flower bed.

(5 marks)

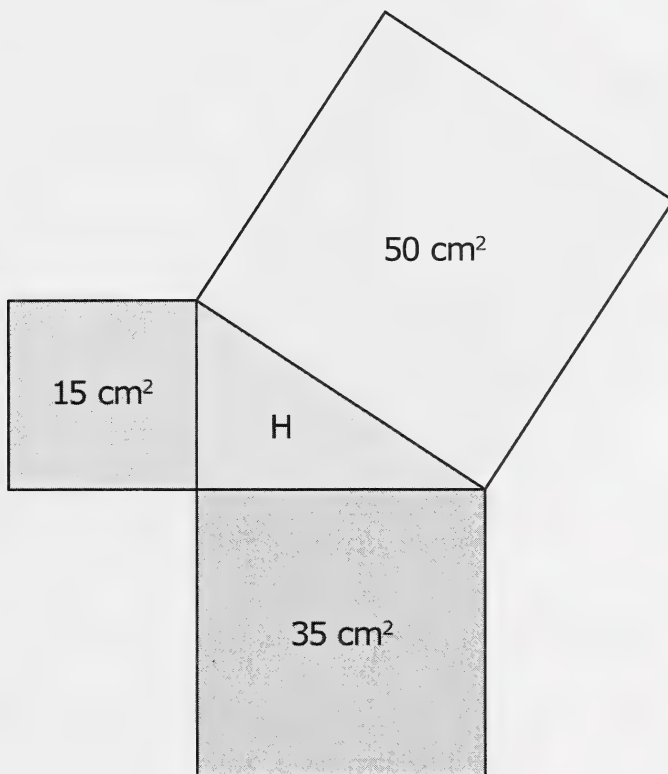
- a. Determine the side length of the flower bed. Give your answer to two decimal places. Use an estimation strategy—not the square root button on your calculator. Then use the multiplication function of your calculator to improve your estimation with a guess-and-test method.

(2 marks)

- b. Determine the side length of the flower bed to as many decimal places as you can by using your calculator square root button.

Unit 1: Lesson 5 Question Set

1. The four figures in the design below are quilt blocks. They form part of a pattern for a bedspread that a grandmother is making for a wedding present.



(1 mark)

- a. Is triangle H a right triangle?

(2 marks)

- b. Explain how to demonstrate mathematically that your answer in 1.a is correct.

2. For each of the triangles below, tell whether it is a right triangle; then explain how you know.

(2 marks)

- a. Triangle A has side lengths of 2 cm, 4 cm, and 5 cm.

(2 marks)

- b. Triangle B has side lengths of 8 cm, 15 cm, and 17 cm.

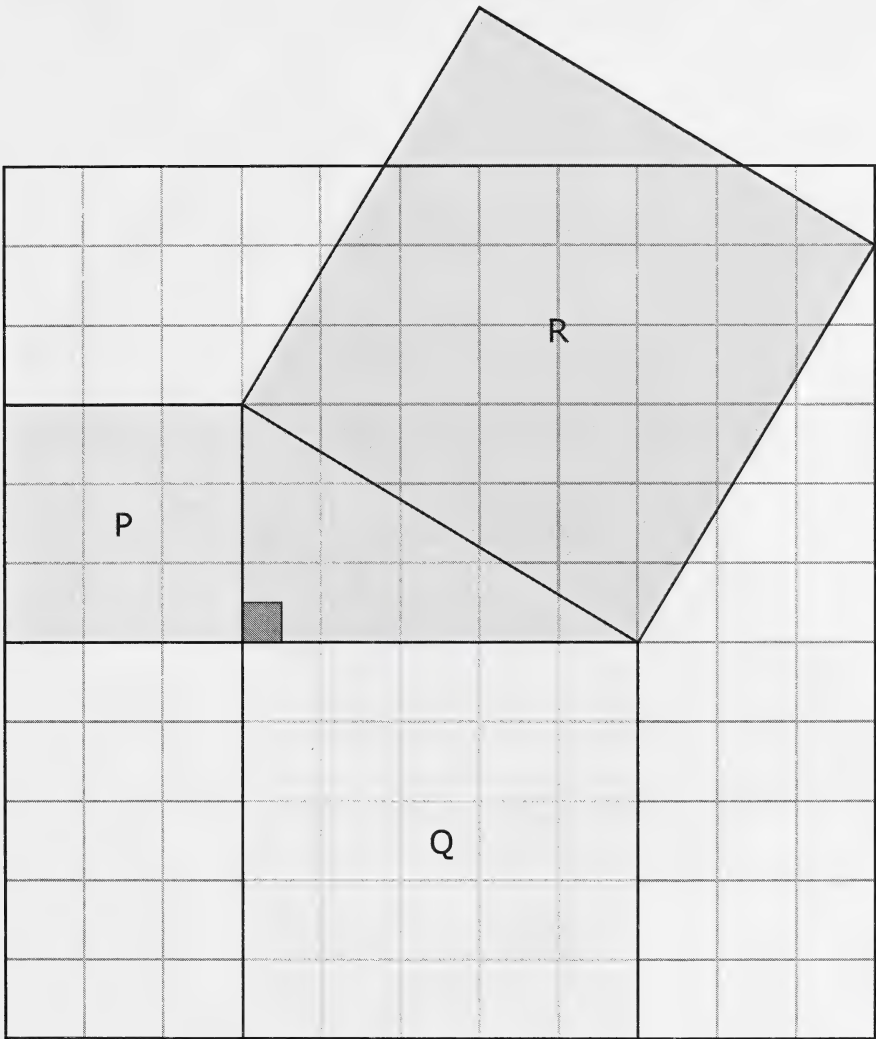
(2 marks)

- c. Triangle A has side lengths of 10 cm, 12 cm, and 15 cm.

(2 marks)

- d. Triangle A has side lengths of 10 cm, 24 cm, and 26 cm.

3. The right triangle below is drawn on a grid of squares. The area of square P is 9 square units.



(1 mark)

- a. What is the area of square Q?

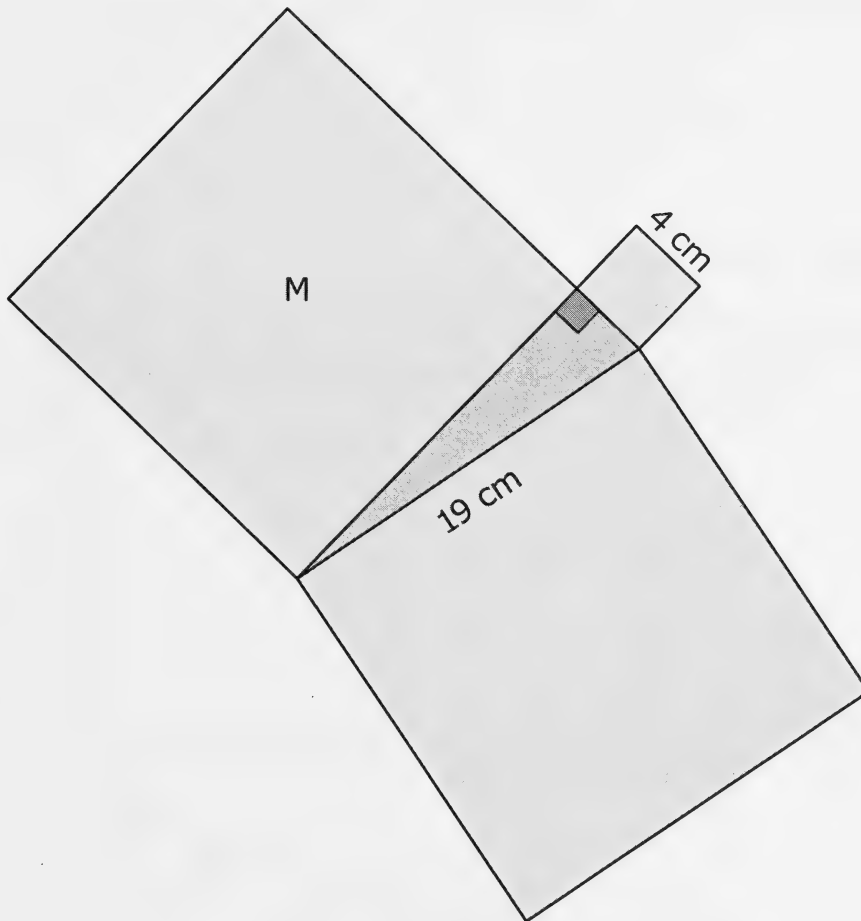
(2 marks)

b. What is the area of square R?

(1 mark)

c. What is the name of the relationship that allowed you to predict the area of square R?

4. Jody and Chris are building a cardboard model of a ramp as part of a proposed skateboard park. The purple triangle will be the side of the ramp, and the tan squares will be bent where they join the purple triangle and taped together as the ramp is constructed. The lengths of two of the sides of the triangle are given in the diagram.



(1 mark)

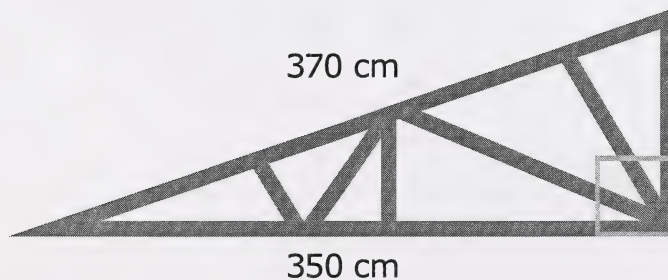
- a. Which of the following statements is true? Circle the correct answer.
- A. The hypotenuse of the triangle is 4 cm in length.
 - B. The hypotenuse of the triangle is 19 cm in length.
 - C. The hypotenuse forms a side of square M.
 - D. None of the above statements is correct.

(3 marks)

- b. What will be the area of square M?

Unit 1: Lesson 6 Question Set**(4 marks)**

1. At the beginning of this lesson, you saw pictures of the long train bridge at Lethbridge and how the supporting towers had right triangles that kept it stable. If the two legs of one of the right triangles were each 12 m long, what would be the length of the hypotenuse? Round your answer to the nearest tenth of a metre.
2. A roof truss used in building a shed is 350 cm wide has a longest side of 370 cm. It is a right triangle, as shown below.

**(4 marks)**

- a. What is the height of the truss?

- (2 marks)** b. Do the measurements form a Pythagorean triplet? Explain how you know.

3. A square lawn area in a public park has an area of 2500 m^2 . The grounds keepers want to put in a diagonal sidewalk in order to keep people from ruining the lawn as they cut across the square from corner to corner.

- (2 marks)** a. Determine the side length of the lawn area.

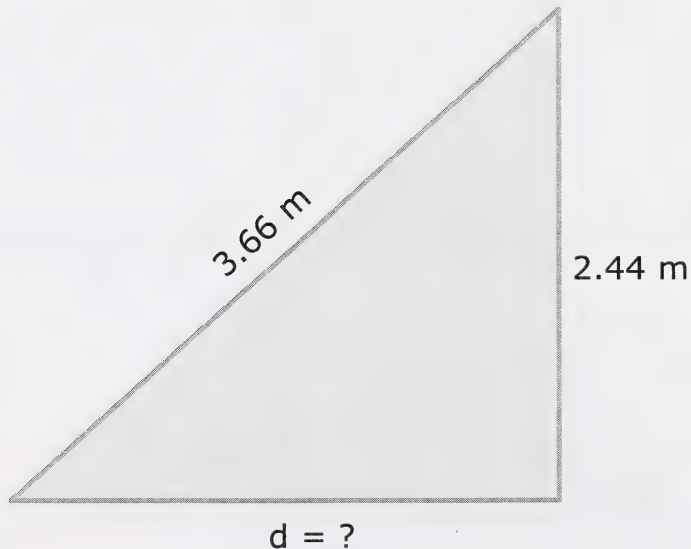
- (4 marks)** b. Determine the side length of the diagonal sidewalk to one decimal place.

(2 marks)

- c. Do the measurements form a Pythagorean triplet? Explain how you know.

Unit 1: Lesson 7 Question Set**(4 marks)**

1. At the beginning of this lesson, in the picture of the house under construction, a long 2 by 4 diagonal brace is shown near the centre of the picture. If the framers of the house know that the height of the wall is going to be 2.44 m and they want to brace the wall at right angles to the floor, how far from the wall should they place the bottom of the 3.66 m diagonal brace? Give your answer in metres to two decimal places.



- (4 marks)** 2. An airplane flies with a heading due south, but a chinook wind blowing from the west pushes the plane to the east 25 km off course. If the pilot has flown at an air speed that should have taken the airplane 95 km south, how far has he actually travelled from his take-off point? Draw a diagram of the situation, and indicate the right angle in the triangle. Show your work in calculating the answer to the question, and give your answer to the nearest tenth of a kilometre.
- (4 marks)** 3. At the beginning of this lesson, there is a photograph that shows stairs going up a rock wall in a diagonal pattern. If the set of stairs is 9.4 m long and the horizontal distance that a person travels going up the stairs is 7.5 m, what is the height of the stairs? Give your answer in metres to one decimal place.
- (4 marks)** 4. A computer monitor advertised as a 20-inch monitor has a diagonal screen measurement of 51 cm and a screen height of 27 cm. What is the width of the screen?

(5 marks)

5. The picture of the house under construction at the beginning of this lesson shows a gable end of the roof. If the width of the roof is 4.28 m and the height of the gable end is 1.22 m, what is going to be the length of each side of the roof truss? Give your answer in metres to two decimal places.

